

Application No.: 09/854,865

Amendment Date: July 14, 2004

Reply to office action of April 14, 2004

Amendments to the Claims

Listing of Claims

This listing of the claims will replace all prior versions, and listings, of claims in the application.

CLAIMS

- 1 1 (Original) A multi-frame tape library system, comprising:
- 2 a plurality of individual frames connected in series, each said frame comprising a pulse
- 3 signal generator and a delay signal generator, at least one said frame also comprising
- 4 a total count counter;
- 5 a multi-channel bus coupled to each said frame and comprising a frame bus for carrying
- 6 information indicative of the presence of each said frame, and a power bus return bus
- 7 carrying information indicative of the last frame in said series;
- 8 wherein one of said frames being defined as a first frame and adapted to receive a signal
- 9 indicative of power being supplied to any one of said frames and generate a delayed
- 10 signal, each subsequent frame receiving said delayed signal and generating a further
- 11 delayed signal and each frame generating a pulse on said frame bus; wherein one of
- 12 said frames being defined as said last frame and receiving said delayed signal and
- 13 generating a signal to activate said power return bus; and wherein said total count

14 counter being incremented by each said pulse on said frame bus until said power
15 return bus is activated.

1 2 (Original) A multi-frame tape library system as claimed in claim 1, wherein the count in said
2 total count counter represents the total number of said frames connected together.

1 3 (Currently amended) A multi-frame tape library system as claimed in claim 1, wherein at
2 least one said frame generates a frame pulse when said delay signal is generated for
3 that frame.

1 4 (Original) A multi-frame tape library system as claimed in claim 3, wherein at least one said
2 frame further comprising an individual ID counter being incremented by each said pulse
3 on said frame bus until said frame pulse is generated.

1 5 (Original) A multi-frame tape library system as claimed in claim 4, wherein the count in said
2 individual ID counter represents the individual ID of the frame with respect to the total
3 number of said frames connected together.

1 6 (Original) A multi-frame tape library system as claimed in claim 1, wherein said delayed
2 signal generated by each said frame having a predetermined delay value that is
3 approximately constant.

1 7 (Original) A multi-frame tape library system as claimed in claim 1, wherein said delayed
2 signal generated by each said frame having a delay value that is variable.

1 8 (Original) A modular tape library system comprising:
2 a plurality of individual frames connected together in series, at least one frame
3 comprising a total count counter;

4 a multi-channel bus for exchanging information and data between said frames indicative
5 of the presence of each said frame and information indicative of the last frame in said
6 series;

7 wherein at least of said frames being adapted to receive a signal indicative of power
8 being supplied to any one of said frames and generate a pulse indicative of its
9 presence and a delayed signal which is forwarded to the next frame in the series, each
10 subsequent frame receiving said delayed signal and generating a further delayed
11 signal and a pulse indicative of their presence; and wherein one of said frames being
12 defined as said last frame and receiving said delayed signal and generating a signal to
13 indicate activation of said last frame; and wherein said total count counter being
14 incremented by each said pulse until signal to indicate activation of said last frame is
15 detected.

1 9 (Original) A modular system as claimed in claim 8, wherein the count in said total count
2 counter register represents the total number of said frames connected together.

1 10 (Currently amended) A modular system as claimed in claim 8, wherein at least one said frame
2 generatesing a frame pulse when said delay signal is generated for that frame.

1 11 (Original) A modular system as claimed in claim 10, wherein at least one said frame further
2 comprising an individual ID counter being incremented by each said pulse until said
3 frame pulse is generated.

1 12 (Original) A modular system as claimed in claim 11, wherein the count in said individual ID
2 counter represents the individual ID of the frame with respect to the total number of said
3 frames connected together.

1 13 (Original) A method to automatically detect the total count of frames within a modular multi-

2 frame tape library system, said method comprising the steps of:

3 coupling a plurality of frames to a multi-channel data bus comprising a frame bus and a

4 power bus return bus;

5 designating one of said frames as a first frame;

6 designating one of said frames as a last frame;

7 said first frame receiving a signal indicative of power being supplied to any one of said

8 frames and generating a first delayed signal and a pulse indicative of the presence of

9 said first frame;

10 supplying said pulse to said frame bus;

11 supplying said delayed signal to a subsequent frame, each said subsequent frame

12 generating a delayed signal and a pulse indicative of the presence of each frame and

13 supplying the pulses to said frame bus;

14 generating a signal to activate said power return bus when said delayed signal reaches

15 said last frame; and

16 incrementing a register by each pulse until said power bus is activated.

1 14 (Original) A method as claimed in claim 13, further comprising the steps of:

2 generating a frame pulse when said delay signal is generated for that frame;

3 incrementing a register by each said pulse on said frame bus until said frame pulse is

4 generated.

1 15 (Original) A method as claimed in claim 14, wherein the count in said counter represents the

2 individual ID of the frame with respect to the total number of said frames connected

3 together.

1 16 (Original) A method as claimed in claim 13, wherein the count in said register represents the
2 total number of said frames connected together.

1 17 (Original) A multi-frame tape library system, comprising:

2 a plurality of individual frames connected in series, each said frame comprising a pulse
3 signal generator and a delay signal generator, at least one said frame also comprising
4 an individual ID counter;

5 a multi-channel bus coupled to each said frame and comprising a frame bus for carrying
6 information indicative of the presence of each said frame;

7 wherein one of said frames being defined as a first frame and adapted to receive a signal
8 indicative of power being supplied to any one of said frames and generate a delayed
9 signal, each subsequent frame receiving said delayed signal and generating a further
10 delayed signal and each frame generating a pulse on said frame bus; wherein at least
11 one of said frames generating a frame pulse upon generation of that frame's delayed
12 signal, and wherein said individual ID counter being incremented by each said pulse
13 on said frame bus until said frame pulse is detected.

1 18 (Original) A multi-frame tape library system as claimed in claim 17, wherein the count in
2 said individual ID counter represents the individual ID of the frame with respect to the
3 total number of said frames connected together.

1 19 (Original) A multi-frame tape library system as claimed in claim 17, wherein said multi-
2 channel bus further comprising a power bus return bus carrying information indicative of
3 the last frame in said series; and wherein one of said frames being defined as said last
4 frame and receiving said delayed signal and generating a signal to activate said power
5 return bus.

1 20 (Original) A multi-frame tape library system as claimed in claim 19, wherein at least one said
2 frame further comprising a total count counter; and wherein said total count counter being
3 incremented by each said pulse on said frame bus until said power return bus is activated.

1 21 (Original) A multi-frame tape library system as claimed in claim 20, wherein the count in
2 said total count counter represents the total number of said frames connected together.

1 22 (Original) A modular tape library system comprising:

2 a plurality of individual frames connected together in series, at least one frame
3 comprising an individual ID counter;
4 a multi-channel bus for exchanging information and data between said frames indicative
5 of the presence of each said frame;
6 wherein at least of said frames being adapted to receive a signal indicative of power
7 being supplied to any one of said frames and generate a pulse indicative of its
8 presence and a delayed signal which is forwarded to the next frame in the series, each
9 subsequent frame receiving said delayed signal and generating a further delayed
10 signal and a pulse indicative of their presence; wherein at least one of said frames
11 generating a frame pulse upon generation of that frame's delayed signal, and wherein
12 said individual ID counter being incremented by each said pulse on said frame bus
13 until said frame pulse is detected.

1 23 (Original) A modular system as claimed in claim 22, wherein the count in said individual ID
2 counter represents the individual ID of the frame with respect to the total number of said
3 frames connected together.

1 24 (Original) A modular system as claimed in claim 22, wherein said multi-channel bus further
2 comprising a power bus return bus carrying information indicative of the last frame in

3 said series; and wherein one of said frames being defined as said last frame and receiving
4 said delayed signal and generating a signal to activate said power return bus.

1 25 (Original) A modular system as claimed in claim 24, wherein at least one said frame further
2 comprising a total count counter; and wherein said total count counter being incremented
3 by each said pulse on said frame bus until said power return bus is activated.

1 26 (Original) A modular system as claimed in claim 25, wherein the count in said total count
2 counter represents the total number of said frames connected together.

1 27 (Original) A method to automatically detect the individual identification of frames within a
2 modular multi-frame tape library system, said method comprising the steps of:
3 coupling a plurality of frames to a multi-channel data bus comprising a frame bus;
4 designating one of said frames as a first frame;
5 said first frame receiving a signal indicative of power being supplied to any one of said
6 frames and generating a first delayed signal and a pulse indicative of the presence of
7 said first frame;
8 supplying said pulse indicative of the presence of said first frame to said frame bus;
9 supplying said delayed signal to a subsequent frame, each said subsequent frame
10 generating a delayed signal and a pulse indicative of the presence of each frame and
11 supplying the pulses to said frame bus;
12 generating a signal upon generation of said delayed signal; and
13 incrementing a register by each pulse until said signal is generated.

1 28 (Original) A method as claimed in claim 27, further comprising the steps of:
2 coupling said plurality of framed to said multi-channel bus further comprising a power
3 bus return bus;

4 designating one of said frames as a last frame;

5 generating a signal to activate said power return bus when said delayed signal reaches

6 said last frame; and

7 incrementing a register by each said pulse until activation of said power return bus.

1 29 (Original) A method as claimed in claim 27, wherein the count in said counter represents the
2 individual ID of the frame with respect to the total number of said frames connected
3 together.

1 30 (Original) A method as claimed in claim 28, wherein the count in said counter represents the
2 total number of said frames connected together.

1 31 (Original) A multi-frame tape library system, comprising:

2 a plurality of individual frames connected in series, each said frame comprising a pulse
3 signal generator and a delay signal generator, at least one said frame also comprising
4 a total count counter and an individual ID counter;

5 a multi-channel bus coupled to each said frame and comprising a frame bus for carrying
6 information indicative of the presence of each said frame, and a power bus return bus
7 carrying information indicative of the last frame in said series;

8 wherein one of said frames being defined as a first frame and adapted to receive a signal
9 indicative of power being supplied to any one of said frames and generate a delayed
10 signal, each subsequent frame receiving said delayed signal and generating a further
11 delayed signal and each frame generating a pulse on said frame bus; wherein one of
12 said frames being defined as said last frame and receiving said delayed signal and
13 generating a signal to activate said power return bus; and wherein said total count
14 counter being incremented by each said pulse on said frame bus until said power

15 return bus is activated; and wherein at least one said frame generating a frame pulse
16 when said delay signal is generated for that frame, said individual ID counter being
17 incremented by each said pulse on said frame bus until said frame pulse is generated.

1 32 (Original) A multi-frame tape library system as claimed in claim 31, wherein the count in
2 said individual ID counter represents the individual ID of the frame with respect to the
3 total number of said frames connected together.

1 33 (Original) A multi-frame tape library system as claimed in claim 31, wherein the count in
2 said total count counter represents the total number of said frames connected together.

1 34 (Original) A method to automatically detect the total count and individual identification of
2 frames within a modular multi-frame tape library system, said method comprising the
3 steps of:

4 coupling a plurality of frames to a multi-channel data bus comprising a frame bus and a
5 power bus return bus;

6 designating one of said frames as a first frame;

7 designating one of said frames as a last frame;

8 said first frame receiving a signal indicative of power being supplied to any one of said

9 frames and generating a first delayed signal and a pulse indicative of the presence of

10 said first frame;

11 supplying said pulse to said frame bus;

12 supplying said delayed signal to a subsequent frame, each said subsequent frame

13 generating a delayed signal and a pulse indicative of the presence of each frame and

14 supplying the pulses to said frame bus;

15 generating a signal to activate said power return bus when said delayed signal reaches
16 said last frame;
17 incrementing a first counter by each pulse until said power bus is activated;
18 generating a frame pulse when said delay signal is generated for that frame;
19 incrementing a second counter by each said pulse on said frame bus until said
20 frame pulse is generated.

1 35 (Original) A method as claimed in claim 34, wherein the count in said second counter
2 represents the individual ID of the frame with respect to the total number of said frames
3 connected together.

1 36 (Original) A method as claimed in claim 34, wherein the count in said first counter represents
2 the total number of said frames connected together.